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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/031,254

05/30/2002

Donald Colin Murray Oates

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05/27/2004

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EXAMINER

DEBERADINIS, ROBERT L

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 05/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/031,254

Applicant(s)

OATES, DONALD COLIN
MURRAY

Examiner

Robert DeBeradinis

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the c rresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/30 11/4 1/8.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 16, 25, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by SOAR 5,942,884.

Regarding claims 15, 25, 26.

SOAR discloses:

a single phase isolating high frequency transformer (212) having at least one input primary winding and at least one secondary winding;

an input solid state high frequency switching network comprising a plurality of semiconductor switching devices (221-225), the input switching network defining at least one input node for receiving an input power waveform from the transmission network and at least one output node connected to the at least one primary winding of the transformer;

at least one output solid state high frequency switching network comprising a plurality of semiconductor switching devices (266-269), the output switching network being connected to the at least one secondary winding of the

transformer and defining at least one output node from which an output power waveform is taken from the substation (transmission network); and

control means for controlling the switching devices of the input and output switching networks to generate the output power waveform at the at least one output node from the input power waveform applied to the at least one input node (inherent to the circuit see column 11, lines 1-35, SIG. A, SIG. B, etc.).

Regarding claim 16.

SOAR discloses the substation according to claim 15, in which the control means is operative for controlling the semiconductor switching devices in dependence upon current/or voltage applied to the input switching (column 3, lines 14-23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over SOAR 5,942,884 in view of WELCHES 6,404,655.

Regarding claim 17.

SOAR discloses the substation according to claim 15.

SOAR is silent as to power condition signals from measurement means to sense power flowing to the at least one input node, the control means being operative for

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outputting signals to input and output solid state switching networks thereby to control switching of the semiconductor switching devices therein in response to variations to the power condition signals.

WELCHES discloses power condition signals, current feedback taken from current sensors and voltage feedback taken from voltage sensors to control the power taken from a power regulator.

It would have been obvious to one having ordinary skill in the art at the time of this invention to modify the sensing signals to the control means to include the current and voltage feedback signals. The motivation would be to supply constant real power to the output node even when the output node is exposed to a high magnitude of non-linear loading (abstract).

Regarding claim 18.

SOAR discloses the substation according to claim 15.

SOAR does not disclose in which the input switching network comprises a bridge circuit having at least one input node for each phase of an input supply.

WELCHES discloses bridge switching network (40) outputting controlled power output for a three phase system.

It would have been obvious to one having ordinary skill in the art at the time of this invention to modify the regulator disclosed by SOAR to include the input switching network comprising the bridge circuit. The motivation would be to regulate the power of a three phase system having a three phase input.

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Regarding claims 19, 20.

SOAR in view of WELCHES discloses the substation according to claim 18 wherein the control means is operative for controlling the semiconductor switching devices in the input network so that a single substantially sinusoidal waveform is generated in the at least one primary winding of the transformer.

SOAR in view of WELCHES does not disclose controlling the semiconductor switching devices in the output switching network to reconstruct output power waveforms of different phase from the output power waveform in the secondary winding of the transformer.

WELCHES discloses controlling the power factor by a variable amount out of phase bridge switching (column 2, lines 22-33).

It would have been obvious to one having ordinary skill in the art at the time of this invention to modify the regulator disclosed by SOAR to control the output switching network to reconstruct output power waveforms of different phase from the output power waveform in the secondary winding of the transformer. The motivation would be to correct the power factor for reactive loading.

Claims 21, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over SOAR 5,942,884 in view of SUDHOFF 5,943,229.

Regarding claim 21.

SOAR discloses the substation according to claim 15.

SOAR does not disclose wherein the semiconductor switching devices are arranged in relation to the transformer so that, in the event of a failure of at least one of the semiconductor switching devices and the transformer and the control means, than power is not transmitted across the transformer.

SUDHOFF discloses an isolation module to provide isolation between high voltage AC input from the low voltage AC output.

It would have been obvious to one having ordinary skill in the art at the time of this invention to modify the teachings of SOAR to include an isolation module. The motivation would be to isolate the high voltage from the low voltage to protect the low voltage line from an over voltage condition.

Regarding claim 28.

SOAR in view of SUDHOFF discloses the network according to claim 25 wherein the isolation module provides isolation between the high voltage input and the low voltage output.

SOAR in view of SUDHOFF does not disclose a first isolator and a second isolator being provided upstream and down stream from the substation.

The Examiner takes official notice. The configuration of additional isolator modules is merely a duplication of parts.

It would be obvious to one having ordinary skill in the art at the time of this invention to place isolating modules upstream and down stream from the substation. The motivation would be to isolate upstream high voltages from the substation input and to isolate high voltages from the down stream transmission lines to protect the loads.

Claims 22, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over SOAR 5,942,884.

Regarding claim 22.

SOAR discloses the substation according to claim 15.

SOAR is silent as to matching the input impedance of the substation to a source impedance of a supply line.

The Examiner takes official notice. It is well known in the art that in order to transfer maximum power with minimal power reflected the substation input source impedance must be matched to the line impedance of the line that is supplying the power to the substation.

It would have been obvious to one having ordinary skill in the art at the time of this invention to match the substation's input switching network's impedance to the line impedance. The motivation would be to prevent power from being reflected back to the source from the substation.

Regarding claim 24.

SOAR discloses the substation according to claim 15.

SOAR does not disclose a limiting means for reducing a maximum output voltage produced in the event that a current drain exceeds a preset level.

The Examiner takes official notice. Limiting means for setting limits to voltages and current are well known in the art.

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It would have been obvious to one having ordinary skill in the art at the time of this invention to the maximum output voltage produced in the event of a malfunction. The motivation would be to prevent over voltage damage to the circuits connected to the voltage buss.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over SOAR 5,942,884 in view of NASRALLAH 6,313,640 and MAVRETIC 5,654,679.

Regarding claim 23.

SOAR discloses the substation according to claim 22.

SOAR does not disclose the control means is operative for modifying the switching state of at least one of the switching devices thereby to control the source impedance in real time.

NASRALLAH discloses impedance matching circuit for high voltage transmission system.

MAVRETIC teaches an apparatus for matching a variable load impedance with a generator impedance to provide maximum power transfer.

It would have been obvious to one having ordinary skill in the art at the time of this invention to control the source impedance in real time. The motivation would be to transfer maximum power to a variable load.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over SOAR 5,942,884 in view of HIGASHI 6,014,322.

Regarding claim 27.

SOAR disclose the transmission and distribution network according to claim 25.

SOAR does not disclose networks connected in parallel.

HIGASHI discloses parallel operation for power supply units.


It would have been obvious to one having ordinary skill in the art at the time of this invention to modify the teachings of SOAR to connect a plurality of the substations in a parallel. The motivation would be to supply a higher current than a single network or substation can supply.

Any inquiry concerning this communication should be directed to Robert L. DeBeradinis whose number is (571) 272-2049. The Examiner can normally be reached Monday-Friday from 8:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Brian Sircus, can be reached on (571) 272-2058. The Fax phone number for this Group is (703) 872-9306.

RLD

MAY 18, 2004



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